

IN THE CLAIMS:

1. (Currently Amended) A plasma-processing method for forming a mirror-like etched surface on an object, said method comprising:

providing an apparatus comprising:

a process chamber;

a mounting unit located in the process chamber  
and for holding an object having a surface to be etched;  
and

an electrode located in the processing chamber and  
facing the mounting unit, the electrode having a hole  
therein, the hole opening towards the mounting unit;

mounting an object to be processed on a the mounting unit  
located within a process chamber;

generating a plasma by feeding blowing a plasma-generating  
gas containing a first amount of sulfur hexafluoride and a  
second amount of helium into the process chamber from the hole  
to a surface of the object to be etched and by causing a plasma  
discharge by applying a high frequency voltage between the  
mounting unit and the electrode, the plasma-generating gas  
containing a first amount of sulfur hexafluoride and a second  
amount of helium, the plasma-generating gas containing more  
helium than sulfur hexafluoride;

etching said surface ~~an object~~ with the generated plasma, thereby ~~causing~~ forming at least one reaction product; and

removing said at least one reaction product from a said surface ~~of the object being etched by blowing the~~ plasma-generating gas onto the said surface ~~object simultaneously while~~ etching the object, with etching of said surface until said surface becomes mirror-like.

2. (Cancelled)

3. (Currently Amended) The plasma-processing method of claim 1, wherein ~~an~~ the ~~object to be mounted~~ is a wafer having first and second sides, and ~~the second side includes a damaged-layer at the surface to be etched~~ damaged by mechanical polishing or grinding, and ~~removing said at least one reaction product~~ said etching of said surface comprises removing the damaged-layer ~~of the wafer.~~

4. (Currently Amended) The plasma-processing method of claim 3, wherein: ~~a~~ the wafer to be mounted includes a protective sheet affixed to ~~the first side thereof~~ a second surface of the wafer, and

the etching an object further comprises etching a occurs when the wafer with the protective sheet is mounted to on the mounting unit.

5. (Currently Amended) The plasma-processing method of claim 4, wherein etching a the wafer further comprises etching a the wafer while cooling the mounting unit.

6. (Previously Presented) The plasma-processing method of claim 1, wherein the first amount of helium in the plasma-generating gas is not greater than ten times the second amount of sulfur hexafluoride in the plasma-generating gas.

7. (Currently Amended) The plasma-processing method of claim 1, wherein ~~said removing said~~ at least one reaction product comprises causing the helium in the plasma-generating gas to remove said at least one reaction product from ~~a surface of the etched object~~.